



6712-01

FEDERAL COMMUNICATIONS COMMISSION

47 CFR Parts 2 and 25

[IB Docket Nos. 17-95 and 18-315; FCC 20-66; FRS 16884]

Earth Stations in Motion

AGENCY: Federal Communications Commission.

ACTION: Proposed rule.

SUMMARY: In this document, the Commission seeks to further develop the record regarding potential interference from out-of-band emissions of ESIMs in the 28.35-28.6 GHz band into the adjacent 27.5-28.35 GHz band used by Upper Microwave Flexible Use Service (UMFUS). These actions will promote innovative and flexible use of satellite technology, as well as provide regulatory equity between GSO and NGSO FSS systems.

DATES: Comments are due **[INSERT DATE 30 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER]**. Reply comments are due **[INSERT DATE 60 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER]**.

ADDRESSES: You may submit comments, identified by IB Docket Nos. 17-95 and 18-315, by any of the following methods:

- *Federal Communications Commission's Web Site:* <http://apps.fcc.gov/ecfs>. Follow the instructions for submitting comments.
- *People with Disabilities:* Contact the FCC to request reasonable accommodations (accessible format documents, sign language interpreters, CART, etc.) by e-mail: FCC504@fcc.gov or phone: 202-418-0530 or TTY: 202-418-0432.

For detailed instructions for submitting comments and additional information on the rulemaking process, see the SUPPLEMENTARY INFORMATION section of this document.

FOR FURTHER INFORMATION CONTACT: Cindy Spiers, 202-418-1593.

SUPPLEMENTARY INFORMATION: This is a summary of the Commission's Further Notice of Proposed Rulemaking (*Further Notice*), IB Docket Nos. 17-95 and 18-315, FCC 20-66, adopted on May 13, 2020, and released on May 14, 2020. The full text of this document is available at <https://docs.fcc.gov/public/attachments/FCC-20-66A1.pdf>. The full text of this document is also available for inspection and copying during business hours in the FCC Reference Information Center, Portals II, 445 12th Street SW., Room CY-A257, Washington, DC 20554. To request materials in accessible formats for people with disabilities, send an email to FCC504@fcc.gov or call the Consumer & Governmental Affairs Bureau at 202-418-0530 (voice), 202-418-0432 (TTY).

Paperwork Reduction Act

This document does not contain new or modified information collection requirements subject to the Paperwork Reduction Act of 1995 (PRA), Public Law 104-13. In addition, therefore, it does not contain any new or modified information collection burden for small business concerns with fewer than 25 employees, pursuant to the Small Business Paperwork Relief Act of 2002, Public Law 107-198, see 44 U.S.C. 3506(c)(4).

Synopsis

In this *Further Notice*, we seek to further develop the record regarding potential interference from out-of-band emissions of ESIMs¹ in the 28.35-28.6 GHz band into the adjacent

¹ The term "ESIMs" is the collective designation for three types of earth stations that the Commission authorizes to transmit while in motion: Earth Stations on Vessels (ESVs), Vehicle-Mounted Earth Stations (VMESs), and Earth Stations Aboard Aircraft (ESAAs) to communicate with space stations using frequencies allocated to the fixed satellite service. Broadly stated, Earth Stations on Vessels refers to earth stations that communicate with a satellite

27.5-28.35 GHz band used by Upper Microwave Flexible Use Service (UMFUS). These actions will promote innovative and flexible use of satellite technology, as well as provide regulatory equity between GSO and NGSO FSS systems.

Further Notice of Proposed Rulemaking

In this *Further Notice*, we seek further comment on the Commission's proposal to allow ESIMs to communicate with NGSO FSS space stations in the 28.35-28.6 GHz band. On May 4, 2020, Verizon and US Cellular filed an *ex parte* raising concerns regarding potential interference from out-of-band emissions of ESIMs in the 28.35-28.6 GHz band into the adjacent 27.5-28.35 GHz band used by UMFUS.² We believe this issue merits further discussion and expansion of the record. Therefore, we ask whether the current out-of-band emission limits in § 25.202(f) would be sufficient to protect UMFUS operations in the 27.5-28.35 GHz band. We also ask for comments on what level of interference generated by out-of-band emissions from ESIM operations with NGSO space stations above 28.35 GHz would be acceptable for UMFUS receivers operating immediately below 28.35 GHz, while at the same time not unduly constraining ESIM operations above 28.35 GHz. We seek comment on whether UMFUS receivers have been designed to account for the interference environment created by pre-existing operations in adjacent bands.³ We also request comment on whether UMFUS operators are developing equipment characteristics that make them less susceptible to unwanted energy generated by adjacent band users, and thus more compatible with such users.

while located on maritime vessels such as boats, cargo ships or cruise ships, whereas Vehicle-Mounted Earth Stations and Earth Stations Aboard Aircraft refer to earth stations that communicate with satellites while located on land-based vehicles or aircraft, respectively.

² See Verizon May 4 *Ex Parte* Letter. In response to Verizon's May 4 *Ex Parte* Letter, other parties filed *ex partes* in opposition. See SES Americom, Inc. and O3b Limited, Inmarsat, Inc., Hughes Network Systems, LLC, and EchoStar Satellite Services, L.L.C. May 6 *Ex Parte* Letter; Viasat May 6 *Ex Parte* Letter.

³ Currently, ESIMs can operate with GSO space stations using the 28.35-28.6 GHz band.

The out-of-band emissions limit for UMFUS licensees is -13 dBm/MHz measured either as conductive or total radiated power.⁴ We seek comment on whether ESIM operations should be required to meet this limit below 28.35 GHz. Further, given that ESIM operations require highly directive antennas, should the out-of-band emissions limit be specified as an EIRP limit?

We seek comment on whether typical ESIM operations meeting the out-of-band limits in § 25.202(f) produce interference above these acceptable levels.⁵ We note that the emissions below 28.35 GHz under the part 25 rule depends on the ESIMs transmit power and channel bandwidth whereas the UMFUS limit is a set limit.

Next, if acceptable levels of interference are exceeded what measures should be taken to ensure out-of-band emissions are appropriately limited? We seek comment on whether a sufficiently wide guard band could serve to protect UMFUS receivers. If a guard band could serve to protect UMFUS receivers, we ask for comment on how wide this guard band should be. Further, we seek comment on whether a guard band would be applicable only in certain ESIM operational scenarios (i.e. VMES, ESAA on the ground, ESV in a port).

Additionally, we seek comment on whether setting a minimum elevation angle for ESIM operations with NGSO FSS space stations would be an effective way of achieving the desired balance between protecting UMFUS operations without over constraining FSS operations above 28.35 GHz. Alternatively, when transmitting to a NGSO FSS space station, should we limit the ESIM out-of-band EIRP density towards the horizon or within a certain range of elevation angles?

⁴ 47 CFR 30.203.

⁵ We also note that there is currently an open Commission proceeding that proposes to replace the out-of-band emissions limits in § 25.202(f) with those in Recommendation ITU-R SM.1541-6. *Further Streamlining Part 25 Rules Governing Satellite Services*, Notice of Proposed Rulemaking, 33 FCC Rcd 11502, 11507-08, paras. 18-19 (2018).

Finally, we seek comment on whether aggregation of interference, including that from clutter reflections, should be considered, or is interference likely to be determined by the strongest (closest) interfering source. Given that ESIMs and UMFUS transmitters will likely differ in terms of antenna patterns, heights, and pointing directions, how would aggregate interference from ESIMs differ from that caused by adjacent UMFUS licensees? If aggregate interference is a significant issue, what assumptions should be made in modeling aggregate interference for various use cases of ESIMs?

Ex Parte Procedures. The proceeding this *FNPRM* initiates shall be treated as a “permit-but-disclose” proceeding in accordance with the Commission’s *ex parte* rules.⁶ Persons making *ex parte* presentations must file a copy of any written presentation or a memorandum summarizing any oral presentation within two business days after the presentation (unless a different deadline applicable to the Sunshine period applies). Persons making oral *ex parte* presentations are reminded that memoranda summarizing the presentation must (1) list all persons attending or otherwise participating in the meeting at which the *ex parte* presentation was made, and (2) summarize all data presented and arguments made during the presentation. If the presentation consisted in whole or in part of the presentation of data or arguments already reflected in the presenter’s written comments, memoranda or other filings in the proceeding, the presenter may provide citations to such data or arguments in his or her prior comments, memoranda, or other filings (specifying the relevant page and/or paragraph numbers where such data or arguments can be found) in lieu of summarizing them in the memorandum. Documents shown or given to Commission staff during *ex parte* meetings are deemed to be written *ex parte* presentations and must be filed consistent with § 1.1206(b). In proceedings governed by § 1.49(f) or for which the

⁶ 47 CFR 1.1200 *et seq.*

Commission has made available a method of electronic filing, written *ex parte* presentations and memoranda summarizing oral *ex parte* presentations, and all attachments thereto, must be filed through the electronic comment filing system available for that proceeding, and must be filed in their native format (e.g., .doc, .xml, .ppt, searchable .pdf). Participants in this proceeding should familiarize themselves with the Commission's *ex parte* rules.

Comment Filing Requirements. Pursuant to §§ 1.415 and 1.419 of the Commission's rules, 47 CFR 1.415, 1.419, interested parties may file comments and reply comments on or before the dates indicated on the first page of this document. Comments may be filed using the Commission's Electronic Comment Filing System (ECFS). *See Electronic Filing of Documents in Rulemaking Proceedings*, 63 FR 24121 (1998).

- *Electronic Filers.* Comments may be filed electronically using the Internet by accessing the ECFS: <http://apps.fcc.gov/ecfs>.
- *Paper Filers.* Parties who choose to file by paper must file an original and one copy of each filing. If more than one docket or rulemaking number appears in the caption of this proceeding, filers must submit two additional copies for each additional docket or rulemaking number.

Filings can be sent by commercial overnight courier, or by first-class or overnight U.S. Postal Service mail. All filings must be addressed to the Commission's Secretary, Office of the Secretary, Federal Communications Commission.

- Commercial overnight mail (other than U.S. Postal Service Express Mail and Priority Mail) must be sent to 9050 Junction Drive, Annapolis Junction, MD 20701. U.S. Postal Service first-class, Express, and Priority mail must be addressed to 445 12th Street, SW, Washington DC 20554.

- Effective March 19, 2020, and until further notice, the Commission no longer accepts any hand or messenger delivered filings. This is a temporary measure taken to help protect the health and safety of individuals, and to mitigate the transmission of COVID-19. See FCC Announces Closure of FCC Headquarters Open Window and Change in Hand-Delivery Policy, Public Notice, DA 20-304 (March 19, 2020). <https://www.fcc.gov/document/fcc-closes-headquarters-open-window-and-changes-hand-delivery-policy>

People with Disabilities: To request materials in accessible formats for people with disabilities (braille, large print, electronic files, audio format), send an email to fcc504@fcc.gov or call the Consumer & Governmental Affairs Bureau at 202-418-0530 (voice) or 202-418-0432 (TTY).

Initial Regulatory Flexibility Analysis. As required by the Regulatory Flexibility Act of 1980, as amended, the Commission has prepared an Initial Regulatory Flexibility Analysis (IRFA) for this *Further Notice*, of the possible significant economic impact on small entities of the policies and rules addressed in this document. Written public comments are requested on this IRFA.

Comments must be identified as responses to the IRFA and must be filed by the deadlines for comments on the Notice provided on or before the dates indicated on the first page of this Notice. The Commission's Consumer and Governmental Affairs Bureau, Reference Information Center, will send a copy of the *Further Notice*, including this IRFA, to the Chief Counsel for Advocacy of the Small Business Administration.

Initial Regulatory Flexibility Analysis

As required by the Regulatory Flexibility Act of 1980, as amended (RFA), the Commission has prepared this present Initial Regulatory Flexibility Analysis (IRFA) of the possible significant economic impact on a substantial number of small entities by the policies

and rules proposed in this *Further Notice*. Written public comments are requested on this IRFA. Comments must be identified as responses to the IRFA and must be filed by the deadlines specified in the Notice for comments. The Commission will send a copy of this *Further Notice*, including this IRFA, to the Chief Counsel for Advocacy of the Small Business Administration (SBA). In addition, the *Further Notice* and IRFA (or summaries thereof) will be published in the Federal Register.

A. Need for, and Objectives of, the Proposed Rules

The Further Notice of Proposed Rulemaking proposes to further develop the record to determine the best option to deal with the potential interference from out-of-band emissions of ESIMs in the 28.35-28.6 GHz band into the adjacent 27.5-28.35 GHz band used by Upper Microwave Flexible Use Service (UMFUS), generated by ESIM transmissions to NGSO FSS space stations in frequencies above 28.35 GHz.

B. Legal Basis

The proposed action is authorized under sections 1, 4(i), 301, 303, 307, 308, and 309 of the Communications Act of 1934, as amended, 47 U.S.C. 151, 154(i), 301, 303, 307, 308, and 309.

C. Description and Estimate of the Number of Small Entities to Which the Proposed Rules May Apply

The RFA directs agencies to provide a description of, and, where feasible, an estimate of, the number of small entities that may be affected by adoption of proposed rules. The RFA generally defines the term “small entity” as having the same meaning as the terms “small business,” “small organization,” and “small governmental jurisdiction.” In addition, the term “small business” has the same meaning as the term “small business concern” under the Small

Business Act. A small business concern is one which: (1) is independently owned and operated; (2) is not dominant in its field of operation; and (3) satisfies any additional criteria established by the Small Business Administration (SBA). Below, we describe and estimate the number of small entity licensees that may be affected by adoption of the proposed rules.

Satellite Telecommunications. This category comprises firms “primarily engaged in providing telecommunications services to other establishments in the telecommunications and broadcasting industries by forwarding and receiving communications signals via a system of satellites or reselling satellite telecommunications.” Satellite telecommunications service providers include satellite and earth station operators. The category has a small business size standard of \$35 million or less in average annual receipts, under SBA rules. For this category, U.S. Census Bureau data for 2012 show that there were a total of 333 firms that operated for the entire year. Of this total, 299 firms had annual receipts of less than \$25 million. Consequently, we estimate that the majority of satellite telecommunications providers are small entities.

All Other Telecommunications. The “All Other Telecommunications” category is comprised of establishments primarily engaged in providing specialized telecommunications services, such as satellite tracking, communications telemetry, and radar station operation. This industry also includes establishments primarily engaged in providing satellite terminal stations and associated facilities connected with one or more terrestrial systems and capable of transmitting telecommunications to, and receiving telecommunications from, satellite systems. Establishments providing Internet services or voice over Internet protocol (VoIP) services via client-supplied telecommunications connections are also included in this industry. The SBA has developed a small business size standard for “All Other Telecommunications”, which consists of all such firms with annual receipts of \$35 million or less. For this category, U.S. Census Bureau

data for 2012 show that there were 1,442 firms that operated for the entire year. Of those firms, a total of 1,400 had annual receipts less than \$25 million and 15 firms had annual receipts of \$25 million to \$49, 999,999. Thus, the Commission estimates that the majority of “All Other Telecommunications” firms potentially affected by our action can be considered small.

We estimate, however, that some space station applicants applying under part 25 of the Commission’s rules would qualify as small entities affected by these rule changes. If the Commission were to apply the bond requirement to amateur and experimental space station licensees, then additional small entities would be affected by the rule changes.

D. Description of Projected Reporting, Recordkeeping, and Other Compliance Requirements for Small Entities

The FNPRM proposes to develop the record on the level of interference generated by out-of-band emissions from ESIM operations with NGSO space stations above 28.35 GHz that would be acceptable for UMFUS receivers operating immediately below 28.35 GHz, while at the same time not unduly constraining FSS operations above 28.35 GHz. This would protect all users in the various bands and reduce paperwork costs for such satellite operators by establishing a mutually acceptable sharing environment.

E. Steps Taken to Minimize Significant Economic Impact on Small Entities, and Significant Alternatives Considered

The RFA requires an agency to describe any significant, specifically small business, alternatives that it has considered in reaching its proposed approach, which may include the following four alternatives (among others): “(1) the establishment of differing compliance or reporting requirements or timetables that take into account the resources available to small entities; (2) the clarification, consolidation, or simplification of compliance and reporting

requirements under the rules for such small entities; (3) the use of performance rather than design standards; and (4) an exemption from coverage of the rule, or any part thereof, for such small entities.”

The FNPRM seeks comment on whether setting a minimum elevation angle for ESIM operations with NGSO FSS space stations would be an effective way of achieving the desired balance between protecting UMFUS operations without over constraining FSS operations above 28.35 GHz. The FNPRM alternatively considers whether, when transmitting to a NGSO FSS space station, the Commission should limit the ESIM out-of-band e.i.r.p density towards the horizon or within a certain range of elevation angles. These changes may reduce the economic and other impacts for other service providers. However, the Commission invites comment on these options and any alternatives.

F. Federal Rules that May Duplicate, Overlap, or Conflict With the Proposed Rules

None.

Federal Communications Commission.

Marlene Dortch,

Secretary.

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